Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus comprising: ~~A perpendicular magnetic recording head for use with~~

a magnetic recording medium ~~to improve resolution, the magnetic recording medium~~ having a hard magnetic recording layer and a soft magnetic underlayer~~, the~~; and

a perpendicular magnetic recording head comprising:

a read element having a first side and a second side;

a first magnetic flux generating element spaced apart from the first side of said read element, wherein said first magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element; and

a second magnetic flux generating element spaced apart from the second side of said read element, wherein said second magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element, wherein the magnetic flux transmitted to the soft magnetic underlayer by the first magnetic flux generating element flows in an opposite direction within the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the second magnetic flux generating element.

2. (Currently Amended) The ~~perpendicular magnetic recording head~~ apparatus of claim 1, wherein the first and second magnetic flux generating elements are positioned adjacent an electrically conductive element which induces the magnetic flux in the first and second magnetic flux generating elements.

3. (Canceled)

4. (Currently Amended) The ~~perpendicular magnetic recording head~~ apparatus of claim 1, wherein the magnetic flux transmitted to the soft magnetic

underlayer by the first magnetic flux generating element flows in the soft magnetic underlayer away from an area of the soft magnetic underlayer beneath the read element.

5. (Currently Amended) The ~~perpendicular magnetic recording head~~ apparatus of claim 1, wherein the magnetic flux transmitted to the soft magnetic underlayer by the second magnetic flux generating element flows in the soft magnetic underlayer away from an area of the soft magnetic underlayer beneath the read element.

6. (Currently Amended) The ~~perpendicular magnetic recording head~~ apparatus of claim 1, wherein the first and second magnetic flux generating elements include at least one material selected from the group consisting of Permalloy, FeAlN, Fe/Co and Ni/Fe (45/55).

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Currently Amended) An apparatus ~~A perpendicular magnetic recording head,~~ comprising:

a read element;

a magnetic recording medium having a hard magnetic recording layer and a soft magnetic underlayer; and

means for generating a magnetic flux which improves resolution during operation of said read element, wherein the magnetic flux transmitted to the soft magnetic underlayer by the first magnetic flux generating element flows in an opposite direction within the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the second magnetic flux generating element.

16. (Canceled)

17. (Currently Amended) The ~~perpendicular magnetic recording head~~ apparatus of claim 16, wherein at least one magnetic flux generating element is at least partially circumferentially disposed about said read element.

18. (Previously Presented) A magnetic disc drive storage system, comprising:

a housing;

a magnetic recording medium having a hard magnetic recording layer and a soft magnetic underlayer; and

a perpendicular magnetic recording head positioned adjacent the magnetic recording medium, the recording head comprising:

a read element having a first side and a second side;

a first magnetic flux generating element spaced apart from the first side of said read element, wherein said first magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element; and

a second magnetic flux generating element spaced apart from the second side of said read element, wherein said second magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element, wherein the first and second magnetic flux generating elements improve the resolution of the recording head, wherein the magnetic flux transmitted to the soft magnetic underlayer by the first magnetic flux generating element flows in an opposite direction within the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the second magnetic flux generating element.

19. (Original) The magnetic disc drive storage system of claim 18, wherein an air-bearing surface of the first and second magnetic flux generating elements is spaced from a boundary layer of the soft magnetic underlayer a distance of from about 5 nm to about 10 nm.

20. (Previously Presented) The magnetic disc drive storage system of claim 18, wherein the flux transmitted to the soft magnetic underlayer is concentrated in

an area of the soft magnetic underlayer beneath at least one magnetic flux generating element.

21. (Original) The magnetic disc drive storage system of claim 18, wherein the flux transmitted to the soft magnetic underlayer has the effect of curving a boundary layer of the soft magnetic underlayer.

22. (Currently Amended) An apparatus comprising: ~~A perpendicular magnetic recording head for use with~~

a magnetic recording medium ~~to improve resolution, the magnetic recording medium~~ having a hard magnetic recording layer and a soft magnetic underlayer~~, the~~; and

a perpendicular magnetic recording head comprising:

a read element having a first side and a second side;

a first magnetic flux generating element spaced apart from the first side of said read element, wherein said first magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element; and

a second magnetic flux generating element spaced apart from the second side of said read element, wherein said second magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element, wherein the first magnetic flux generating element includes an inner magnetic element and an outer magnetic element, said inner magnetic element spaced apart from the first side of said read element and positioned between said read element and said outer magnetic element.

23. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 22, wherein the first magnetic flux generating element further includes a yoke that magnetically connects the inner magnetic element and the outer magnetic element.

24. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 22, wherein the flux transmitted to the soft magnetic underlayer is concentrated in an area of the soft magnetic underlayer beneath the inner and outer magnetic

elements and therebetween.

25. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 22, wherein the inner magnetic element and outer magnetic element are positioned adjacent an electrically conductive element which induces the magnetic flux in the inner and outer magnetic elements.

26. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 22, wherein the second magnetic flux generating element includes an inner magnetic element and an outer magnetic element, said inner magnetic element spaced apart from the second side of said read element and positioned between said read element and said outer magnetic element.

27. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 26, wherein the second magnetic flux generating element further includes a yoke that magnetically connects the inner magnetic element and the outer magnetic element.

28. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 26, wherein the flux transmitted to the soft magnetic underlayer is concentrated in an area of the soft magnetic underlayer beneath the inner and outer magnetic elements and therebetween.

29. (Currently Amended) The apparatus ~~perpendicular magnetic recording head~~ of claim 26, wherein the inner magnetic element and outer magnetic element are positioned adjacent an electrically conductive element which induces the magnetic flux in the inner and outer magnetic elements.

30. (Currently Amended) An apparatus comprising: ~~A perpendicular magnetic recording head for use with~~

a magnetic recording medium ~~to improve resolution, the magnetic recording medium~~ having a hard magnetic recording layer and a soft magnetic underlayer~~, the~~; and

a perpendicular magnetic recording head ~~comprising~~ including:

a read element having a first side and a second side;

a first magnetic flux generating element spaced apart from the first side of said read element, wherein said first magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element; and

a second magnetic flux generating element spaced apart from the second side of said read element, wherein said second magnetic flux generating element transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element, wherein the flux transmitted to the soft magnetic underlayer reduces the distance between an image read element and the hard magnetic layer.

31. (New) The apparatus of claim 30, wherein:

the flux transmitted to the soft magnetic underlayer saturates a first portion of the soft magnetic underlayer adjacent to the first magnetic flux generating element and saturates a second portion of the soft magnetic underlayer adjacent to the second magnetic flux generating element to produce a curved saturation boundary between the first and second portions of the soft magnetic underlayer.

32. (New) A method of reducing a distance between a read element image and a hard magnetic recording layer of a magnetic recording medium including the hard magnetic recording layer and a soft magnetic underlayer, the method comprising:

locating a perpendicular magnetic recording head adjacent to the magnetic recording medium, wherein the perpendicular magnetic recording head includes a read element having a first side and a second side, a first magnetic flux generating element spaced apart from the first side of said read element, and a second magnetic flux generating element spaced apart from the second side of said read element; and

using the first magnetic flux generating element and the second magnetic flux generating element to transmit magnetic flux into the soft magnetic underlayer to reduce a distance between the read element image and the hard magnetic layer.

33. (New) The apparatus of claim 32, wherein:

the magnetic flux transmitted to the soft magnetic underlayer saturates a first portion of the soft magnetic underlayer adjacent to the first magnetic flux generating

element and saturates a second portion of the soft magnetic underlayer adjacent to the second magnetic flux generating element to produce a curved saturation boundary between the first and second portions of the soft magnetic underlayer.